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*Koza, J.R.; Keane, M.A.; Yu, J.; Bennett, F.H., III.; Mydlowec, W.; Stiffelman, O.*  
Decision and Control, 1999. Proceedings of the 38th IEEE Conference on ,  
Volume: 5 , 1999  
Page(s): 5292 -5300 vol.5

[\[Abstract\]](#) [\[PDF Full-Text \(704 KB\)\]](#) **CNF**

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**2 Automatic creation of both the topology and parameters for a robust controller by means of genetic programming**

*Koza, J.R.; Keane, M.A.; Bennett, F.I., III; Jessen Yu; Mydlowec, W.; Stiffelman, O.*  
Intelligent Control/Intelligent Systems and Semiotics, 1999. Proceedings of the  
1999 IEEE International Symposium on , 1999  
Page(s): 344 -352

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 Josep Díaz , Jordi Petit , Maria Serna  
**ACM Computing Surveys (CSUR)** September 2002  
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 Graph layout problems are a particular class of combinatorial optimization problems whose goal is to find a linear layout of an input graph in such way that a certain objective cost is optimized. This survey considers their motivation, complexity, approximation properties, upper and lower bounds, heuristics and probabilistic analysis on random graphs. The result is a complete view of the current state of the art with respect to layout problems from an algorithmic point of view.
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 Hugo A. D. do Nascimento  
**Australian symposium on Information visualisation - Volume 9** December 2001  
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 Michael Syryjakow , Joerg Berdoux , Helena Szczerbicka  
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 Charu C. Aggarwal , Philip S. Yu  
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 In Lee , Jatinder N. D. Gupta , Amar D. Amar  
**Proceedings of the 2001 ACM symposium on Applied computing** March 2001
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 Neal K. Bambha , Shuvra S. Bhattacharyya , Jürgen Teich , Eckart Zitzler  
**Proceedings of the ninth international symposium on Hardware/software codesign** April 2001  
 In this paper, we explore a hybrid global/local search optimization framework for dynamic voltage scaling in embedded multiprocessor systems. The problem is to find, for a multiprocessor system in which the processors are capable of dynamically varying their core voltages, the optimum voltage levels for all the tasks in order to minimize the average power consumption under a given performance

constraint. An effective local search approach for static voltage scaling based on the concept of a < ...

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**Proceeding of the 20th international conference on Information Systems** January 1999
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 Volume 4
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 Dimitris Papadias  
**Proceedings of the 23rd annual international ACM SIGIR conference on Research and development in information retrieval** July 2000  

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- 33** A loosely coupled parallel algorithm for standard cell placement 100%  
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**1994 IEEE/ACM international conference on Computer-aided design** November 1994  
 We present a loosely coupled parallel algorithm for the placement of standard cell integrated circuits. Our algorithm is a derivative of simulated annealing. The implementation of our algorithm is targeted towards networks of UNIX workstations. This is the very first reported parallel algorithm for standard cell placement which yields as good or better placement results than its serial version. In addition, it is the first parallel placement algorithm reported which offers nearly linear spe ...
- 34** Minimal cost set covering using probabilistic methods 100%  
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- 35** An object-oriented environment for specification and concurrent execution of genetic algorithms 100%  
 L. Lemarchand , A. Plantec , B. Pottier , S. Zanati  
**ACM SIGPLAN OOPS Messenger , Addendum to the proceedings on Object-oriented programming systems, languages, and applications (Addendum)** December 1992  
 Volume 4 Issue 2  
 Genetic algorithms (GA) mimic natural reproduction to search for complex problem solutions. Their principles are shortly explained. A point of interest is the regular and repetitive structure of computation involving communication, data exchanges, and control phases. Interaction with presentation and analysis tools is also a requirement. This make sense for the definition of a general framework allowing fast building of parallel applications in an object-oriented system. A GA workbench is ...
- 36** A parallel genetic algorithm for the graph partitioning problem 100%  
 E.-G. Talbi , P. Bessière  
**Proceedings of the 5th international conference on Supercomputing** June 1991
- 37** ESP: a new standard cell placement package using simulated evolution 99%  
 R.-M. Kling , P. Banerjee  
**24th ACM/IEEE conference proceedings on Design automation conference** October 1987  
 ESP (Evolution-based Standard cell Placement) is a new program package designed to perform standard cell placement and includes macro-block placement capabilities. It uses the new heuristic method of simulating an evolutionary process in order to minimize the cell interconnection wire length. While achieving results comparable to or better than the popular Simulated Annealing algorithm, ESP performs its task about ten times faster.

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American Control Conference, 1997. Proceedings of the 1997 , Volume: 6 , 1997

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Parallel Architectures, Algorithms, and Networks, 1996. Proceedings., Second International Symposium on , 1996

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**7 Hybridized crossover-based search techniques for program discovery**

*O'Reilly, U.-M.; Oppacher, F.*

Evolutionary Computation, 1995., IEEE International Conference on , Volume: 2 , 1995

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**8 Relational matching with stochastic optimisation**

*Cross, A.D.J.; Hancock, E.R.*

Computer Vision, 1995. Proceedings., International Symposium on , 1995

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**9 Genetic algorithms and simulated annealing: a marriage proposal**

*Adler, D.*

Neural Networks, 1993., IEEE International Conference on , 1993

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**10 Hill-climbing, simulated annealing and genetic algorithms: a comparative study and application to the mapping problem**

*Talbi, E.-G.; Muntean, T.*

System Sciences, 1993, Proceeding of the Twenty-Sixth Hawaii International Conference on , Volume: ii , 1993

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**11 Bit-string optimization in a brachytherapy dosimetry problem**

*Chakraborty, U.K.; Dastidar, D.G.*

TENCON '92. 'Technology Enabling Tomorrow : Computers, Communications and Automation towards the 21st Century.' 1992 IEEE Region 10 International Conference. , 1992

Page(s): 433 -437 vol.1

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**12 MAP estimation in image restoration by a local search enhanced genetic algorithm**

*Hu, Y.; Dennis, T.J.*

Digital Processing of Signals in Communications, 1991., Sixth International Conference on , 1991

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[\[Abstract\]](#) [\[PDF Full-Text \(436 KB\)\]](#) [CNF](#)

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**13 A new and efficient partitioning algorithm: genetic partitioning**

*Jin, L.-M.; Chan, S.-P.*

Circuits and Systems, 1991., Proceedings of the 34th Midwest Symposium on , 1992

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## Genetic algorithms and simulated annealing for robustness analysis

Zhu, X. Huang, Y. Doyle, J.

California Inst. of Technol., Pasadena, CA, USA

*This paper appears in: American Control Conference, 1997. Proceedings of the 1997*

On page(s): 3756 - 3760 vol.6

4-6 June 1997

Albuquerque, NM, USA

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Volume: 6

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IEEE Catalog Number: 97CH36041

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### Abstract:

Genetic algorithms (GAs) and simulated annealing (SA) have been promoted as useful, general tools for nonlinear optimization. This paper explores their use in robustness analysis with real parameter variations, a known NP hard problem which would appear to be ideally suited to demonstrate the power of GAs and SA. Numerical experiment results show convincingly that they turn out to be poorer than existing branch and bound (B) approaches. While this may appear to shed doubt on some of the hype surrounding these stochastic optimization techniques, we find that they do have attractive features, which are also demonstrated in this study. For example, both GAs and SA are almost trivial to understand and program, so they require essentially no expertise, in sharp contrast to the B methods. They may be suitable for problems where programming effort is much more important than running time or the quality of the answer. Robustness analysis for engineering problems is not the best candidate in this respect, but it does provide an interesting test case for the evaluation of GAs and SA. A simple hill climbing algorithm is also studied for comparison.

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### Index Terms:

*genetic algorithms; simulated annealing; computational complexity; robust control; control system analysis; robustness analysis; nonlinear optimization; branch and bound; engineering problems; hill climbing algorithm*

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